



306.38372X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants: MEIER et al  
Serial No.: 09/529,383  
Filed: April 13, 2000  
For: Method For Increasing The Wear Resistance  
Of A Work Piece  
Group: 3726  
Examiner: T. Nguyen

AF cc  
19  
Appeal Brief  
(3)  
Cler  
7-203

APPELLANTS' BRIEF

Mail Stop: Appeal Brief - Patent  
Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This brief is being submitted in triplicate under 37 CFR 1.192 in  
connection with the appeal of the final rejection mailed November 19, 2002, a  
notice of appeal having been filed April 21, 2003.

REAL PARTY IN INTEREST

The real party in interest is CeramTec AG Innovative Ceramic Engineering  
and UKM Umformtechnik and Kraftfahrzeugkomponenten, the assignees of the  
subject application.

RECEIVED

JUN 26 2003

TECHNOL. GROUP 3600

RECEIVED  
June 23, 2003  
GROUP 3600

06/24/2003 EFLORES 00000048 09529383  
01 FC:1401 320.00 OP

06/24/2003 EFLORES 00000127 09529383  
01 FC:1402 320.00 OP

Void date: 06/24/2003 EFLORES  
06/24/2003 EFLORES 00000048 09529383  
01 FC:1401 -320.00 OP

## RELATED APPEALS AND INTERFERENCES

On information and belief, there is no other appeal or interference known to appellants, appellants' legal representative, or assignees which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

## STATUS OF CLAIMS

Claims 1 - 4 and 7 - 14 have been canceled leaving claims 5, 6 and 15 pending. All of the pending claims, i.e., claims 5, 6 and 15 stand finally rejected and are appealed.

## STATUS OF AMENDMENTS

An Amendment After Final Rejection Under 37 CFR 1.116 was filed February 19, 2003. That Amendment was not entered. A Second Amendment After Final Rejection Under 37 CFR 1.116 was filed March 18, 2003. That amendment should be entered. See the Advisory Action mailed April 3, 2003.

## SUMMARY OF THE INVENTION

The present invention relates to a method for increasing the wear resistance of a work piece. See, page 1, lines 4 and 5 of appellants' specification. In order to increase the wear resistance of a work piece, it is known that the loaded surface of the work piece can be protected by means of a material that is of a greater hardness than the work piece material. Materials

that cannot be reshaped, such as hard metal or ceramic materials, called core materials in appellants' specification, are particularly suitable for this. See, page 1, lines 7 - 13 of appellants' specification.

In accordance with the present invention, the core material is connected to the work piece in a form-fitting manner by means of a cold-extrusion or hot-extrusion of the work piece material. See, page 2, lines 7 - 10 of appellants' specification.

In order to achieve security against torsion, additional shaped elements such as, e.g., knurling, rounded-off notches and/or areas, hollow spaces and/or undercuts are worked into the core materials are special surface qualities are produced. See, page 3, lines 31 - 36 of appellants' specification.

As shown in Figure 2a, for example, the additional shaped elements can be constituted by a knurling 3 as shown in Figure 2a. See, the paragraph bridging pages 6 and 7 of appellants' specification.

An example of an application of the method of the present invention is shown in, e.g., Figure 1 of the subject application. Figure 1 shows diagrammatically a valve drive of an internal combustion engine which includes a camshaft 11, a tappet 12, a push rod 13, a rocker arm 14 with a rocker arm axle 15, a setting screw 16, a valve 17 with a spring plate 18, a valve guide 19 and a valve spring 20. These parts are to some extent very susceptible to wear. The wear-resistance of the working surface of the cam shaft 11, for example, can be increased by providing, on the tappet 12, a core material 2 which has a greater hardness than the material of the tappet 12. According to the method of the

present invention, the core material 2 is connected to the work piece 12 in a form-fitting by means of cold-extrusion or hot-extrusion. See, page 6, lines 13 - 32 of appellants' specification.

Appellants' specification provides examples of the cold-extrusion or hot-extrusion techniques which can be used to connect the core material to the work piece in a form-fitting manner. For example, Figures 4a and b diagrammatically show forward cup extrusion; Figures 5a and b diagrammatically show backward cup extrusion; Figure 6a and b diagrammatically show forward tube extrusions; Figures 7a and b diagrammatically show backward tube extrusion; Figures 8a and b diagrammatically show forward solid extrusion or reduction; Figures 9a and b diagrammatically show backward solid extrusion; and Figures 10a and b diagrammatically show lateral extrusion or compression. See, e.g., page 5, line 28 to page 6, line 12 and page 7, line 21 to page 10, line 4 of appellants' specification.

## ISSUES

Whether claims 5, 6 and 15 are patent under 35 USC 103(a) over United States Patent No. 5,860,401 to Adachi et al.

## GROUPING OF CLAIMS

Claims 5, 6 and 15 do not stand or fall together; that is, appellants believe claims 5, 6 and 15 to be separately patentable for the reasons provided hereinafter.

## ARGUMENTS

The patent to Adachi et al discloses a valve seat 46 formed from an insert ring, indicated generally by the reference numeral 67 which is bonded in place into the basic cylinder head material 42. A metallurgical bond is formed at the interface between the insert ring 67 and the base cylinder head material 42. See, e.g., column 6, lines 49 - 54 of Adachi et al. As can be seen in Figure 16 and the accompanying description, a solidus diffusion layer is formed by the bonding method.

Thus, while the Adachi et al patent describes a metallurgical bond (i.e., a pure substance fitting), the work piece is connected to the core material according to the present invention in a form-fitting manner by means of cold-extrusion or hot-extrusion of the work piece. Moreover, the shape of the core material is important to secure the core material against torsion in the work piece when cold extrusion or hot-extrusion is used to connect the work piece to the core material. The Adachi et al patent does not disclose a core material having the claimed shape, i.e., a core material having additional shaped elements provided on a peripheral surface of the core material for securing the core material against torsion in the work piece. Appellants submit the claimed shape for the core material would not be necessary when using the bond described in Adachi et al. Accordingly, it would not have been obvious to provide the core material in the claimed shape based on the teachings of Adachi et al.

The Examiner dismisses many of the claimed features (including the additional shaped elements provided on a peripheral surface of the core material

for securing the core material against torsion in the work piece as set forth in independent claim 5) as design limitations "held to be obvious and not given patentable weight in these method of manufacturing claims as such limitation(s) do not result in any difference in the *claimed* manufacturing process." In the first place, the various features recited in claim 5 and the dependent claims do result in a difference in the claimed manufacturing process from that described in Adachi et al. Certainly, the type and shape of core material have a direct relationship to the claimed manufacturing process. A process (such as that described in Adachi et al) that does not use the claimed core material is, quite simply, a different process.

Moreover, dismissing these features as "design limitations" and holding the same to be obvious without any evidence that they would have been obviousness does not fulfill the obligation of the Patent and Trademark Office to provide reasoned decision-making in connection with the obvious issue under 35 USC 103. See In re Lee, 277 F.3d 1338, 61 USPQ 2d, 430 (Fed. Cir. 2002).

For the foregoing reasons, claim 5 is patentable over Adachi et al.

The Adachi et al patent certainly does not disclose and would not have suggested the method set forth in dependent claim 6, including the additional shaped elements being constituted by a knurling provided on an outer peripheral surface of the core material.

The Adachi et al patent also does not disclose and would not have suggested the method set forth in dependent claim 15, including the additional shaped elements being selected from group consisting of rounded-off notches,

rounded-off areas, hollow spaces and undercuts.

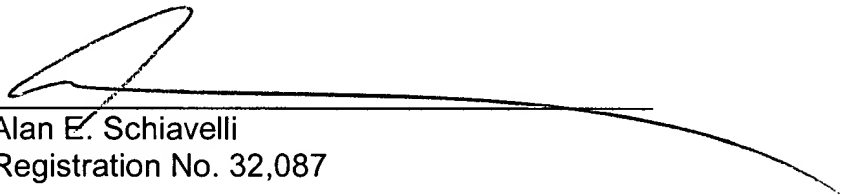
For the foregoing reasons, the final rejection of claims 5, 6 and 15 should be reversed.

A copy of the claims on appeal, i.e., claims 5, 6 and 15 can be found in the attached appendix.

To the extent necessary, appellants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, Deposit Account No. 01-2135 (Case: 306.38372X00), and please credit any excess fees to said deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP



Alan E. Schiavelli  
Registration No. 32,087

AES/jla  
(703) 312-6600

## APPENDIX A

5. A method for increasing the wear-resistance of a work piece, comprising connecting the work piece to a core material that cannot be reshaped and which is of a greater hardness than the work-piece material in a form-fitting manner by means of cold-extrusion or hot-extrusion of the work-piece material, wherein the core material has additional shaped elements provided on a peripheral surface of the core material for securing the core material against torsion in the work piece.

6. Method according to claim 5, characterised in that the additional shaped elements are constituted by a knurling that is provided on an outer peripheral surface of the core material.

15. Method according to claim 5, characterised in that the additional shaped elements are selected from the group consisting of rounded-off notches, rounded-off areas, hollow spaces and undercuts.